3rd Harmonic Monday Meeting Minutes

Date: June 26, 2006
Time: 9 A.M.
Place: ICB Hermitage Conference Room

Attendees (P=Present):

C. Antoine		C. Cooper		E. Harms		A. Rowe	P
T. Arkan	P	N. Dhanaraj	P	T. Khabiboulline	P	N. Solyak	
L. Bellantoni	P	H. Edwards	P	D. Mitchell	P		
C. Boffo		M. Foley	P	D. Olis	P		
H. Carter	P	C. Ginsburg		P. Pfund			

Minutes recorded by Dan
Minutes are posted at: http://tdserver1.fnal.gov/dolis/39GHz_minutes.html
3.9GHz Project page is: www-a0.fnal.gov

Meeting Minutes
Meeting held in ICB Hermitage conference room to discuss design and fabrication of HOM coupler with personnel at JLAB via video conference. Collaborators present at JLAB included: Charlie Reece, Larry Phillips, and an un-identified person familiar with brazing of couplers.

HOM Couplers

- High failure rate of couplers fabricated at Ceramtec due to leaks. Successful JLAB 1.3GHz HOM coupler design ensures only compressive forces result in brazed joints to ceramic/sapphire with cool-down.
- Fermi coupler is now re-designed using JLAB features. Timer will provide final dimensional updates to Don M. and Don will forward prints to Charlie Reece for his review.
- JLAB likely has some excess sapphire rods that FNAL can grind to size. JLAB has provided information on vendors to metallize sapphire for brazing. JLAB will forward to Don braze procedure and picture of tooling used on 1.3GHz coupler.
- Fermilab will procure all coupler pieces and any tooling req'd and send to JLAB for braze in their vacuum oven. Charlie says Tom Elliot (JLAB, not present at video conference) should give tooling final review. JLAB will braze a few initially for qualification and then finish all (20).
- JLAB thermally stress tests their couplers to LN2 temperature by first gradually cooling down parts in gas volume above LN2.

Cavity-2 Processing/Test

- Timer presented summary of test results to date and reaffirmed his suspicion that multipacting in HOM body between Formteil and HOM can wall is causing local heating and poor Q. Thermometry on HOM can surface verifies heating at input coupler end of cavity, both in the region where the gap between the Formteil and the can wall is a minimum and at the tuning end of the can. Sensor midway between where two Formteil posts are welded to the can shows no heating. Timer reports last test achieved 14MV/m and Q improved 2x's from last test. He still is analyzing data.
- An optical camera monitoring HOM body in vessel shows no GHe bubbles. Thermometry near HOM shows heating to ~8K with high power with fairly long time constant (10seconds) for re-cool after power is removed. This surprised Charlie Reece and he suggests it might not be real. Timer will talk to Salman Tariq about doing a thermal analysis of this region.
- Cavity will next be outfitted with (3) more (four total) field probes to look for emissions. Timer and Don will review probe tip lengths and modify standard probes as Timer requires. Before

next test, cavity will be rinsed, dried, probes installed, rinsed again, dried, and then installed in vertical test in flipped orientation to feed power from other end (main input coupler end).

- Currently only voltages on temperature sensors can be read out. Allan will talk to Ruben about getting fast readout of temperatures directly.
- General discussion on how to possibly modify HOM in-situ.
- General discussion on how to possibly modify HOM on cavities still in fabrication.
- Decision to fabricate another cavity will be made after next test.

Cavity Fabrication

- Mike reports dumbbells for cavities 7&8 are done. He'll give them to Timer to test.
- Helen wants dimension from HOM coupler port flange surface to F-probe controlled in fabrication. Mike will have Don update drawings to include this critical dimension.